

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



United States Department of Agriculture,

FOREST SERVICE—Circular 54.

GIFFORD PINCHOT, Forester.

FOREST PLANTING LEAFLET.

HOW TO CULTIVATE AND CARE FOR FOREST PLANTATIONS ON THE SEMIARID PLAINS.

OBJECTS OF CULTIVATION.

Successful forest planting on the Plains, where the rainfall is light or irregular and the evaporation great, depends largely upon the proper tillage of the soil. The region possesses a deep, rich, easily-worked soil, which the farmers are learning how to utilize to the best advantage. The early tree planters often set their trees carelessly and left them to struggle with the native vegetation and dry weather. Planters are now beginning to realize that trees as well as agricultural crops respond to good cultivation.

The objects of cultivation are two: First, to prevent the growth of weeds and grass; second, to conserve the soil moisture. The natural supply of moisture on the plains is sufficient for the growth of many species of trees, provided it is fully utilized and not allowed to escape through evaporation or to be appropriated by weeds and grass.

TREATMENT OF THE SOIL.

Before the trees are set, the ground should be thoroughly worked and put in good condition. Virgin sod should be broken and the land farmed for two or three years. Deep plowing, followed immediately by the harrow, saves moisture and makes the soil easily penetrable by the roots. After the trees are set there should be frequent shallow cultivation. An ideal method is to cultivate as soon as practicable after every rain, in order to maintain a dust mulch over the surface. The nearer this ideal is approached, the better the results will be. The dust mulch is the best medium to conserve the moisture already in the ground, and to keep the soil in condition to absorb the next rain.

MULCHING.

A mulch of hay, straw, or well-rotted manure may be used where cultivation is not feasible, but it is not to be generally recommended. The mulch retards the growth of weeds, checks evaporation, and prevents baking of the soil, but if continued long it causes the roots to grow close to the surface, so that when the litter is removed they are

liable to be damaged by the exposure. The mulch has another disadvantage in that it furnishes a congenial harbor for mice and all kinds of insects. A mulch of hay or straw is less objectionable around trees set in the sod, where it is inconvenient or undesirable to cultivate. Along a hedgerow, for instance, a mulch may be of great benefit.

SPACING THE TREES.

The advantage to be gained by continued cultivation of a forest plantation makes rather wide spacing advisable, even though certain species which have a spreading habit may require pruning so that the trunks may grow clear and the cultivation not be impeded. Compensation for the wide spaces between the rows can be secured in large measure by setting the trees closer in the rows. The spacing of many plantations is 4 feet by 4 feet, but trees set in that way can be cultivated only two or three years. Spacing 2 feet by 8 feet gives the same number of trees to the acre, and makes it possible to continue the cultivation much longer. Species which need more room can be set 3 feet by 8 feet or 4 feet by 8 feet, and, as they grow, the space required can be obtained by removing the less promising individuals. The less cultivation that is to be given a plantation the closer the trees should be set; for, in the absence of artificial methods of conserving the soil moisture, the stand itself must be dense enough to shade the ground and furnish a litter which will maintain the proper moisture conditions. Without this the trees will neither grow rapidly nor preserve their vigor. On the semiarid plains, however, wide spacing and frequent cultivation will produce better trees than close spacing and little cultivation.

SITUATIONS WHERE CULTIVATION IS UNNECESSARY.

In river and creek valleys, where water is found at from 5 to 20 feet below the surface, cultivation is not ordinarily necessary after the trees are thoroughly established. The same is true in many places on the upland, where shallow depressions catch the run-off from considerable adjoining areas. In such situations the supply of water may be concentrated on any desired part of the depression by running furrows to it from the surrounding slopes. This method has been successfully used by some of the most progressive western farmers.

FALL CULTIVATION HARMFUL.

Cultivation should not be continued too late in the fall, for it tends to produce tender young shoots after the normal growth has ceased, which may not be able to withstand the winter. The wood should have time to harden before cold weather sets in. If the ground has been kept clean, weeds will give little trouble after the middle of August.

PLANTING CROPS WITH TREES.

The planting of field crops between rows of young trees on the plains is unwise; the trees need all the available moisture. Corn is especially harmful, because the roots spread both down and out from 5 to 8 feet, and take much more soil moisture than the young trees. If any crop is planted it should be a short-lived one of the garden kind, whose roots do not spread far and are soon gone.

TOOLS—METHODS OF CULTIVATION.

The plow has no place among trees, other than to prepare the ground for planting. The plantation is often neglected until the weeds have formed a dense growth 3 or 4 feet high, and then the ground between the rows is plowed. The plow leaves the ground rough, a condition which greatly increases the loss of soil moisture through evaporation. Dead furrows are formed between the rows, or the earth is thrown away from the bases of the trees and many roots are cut, which does great injury to the trees.

The best implements for the cultivation of the ground are the pulverizing harrow, the disk harrow, the dagger-tooth harrow, and the five-tooth cultivator. The pulverizing harrow is an excellent tool for shallow tillage, and, when used frequently enough, is all that is necessary. Where the weeds are large an ordinary cultivator may be put in or a shallow disking given, but to give the best surface conditions the disk should be set quite slanting or be followed by a harrow. A single section of a dagger-tooth harrow drawn by one horse may be used advantageously between the rows of trees. The five-tooth, one-horse cultivator requires the least space of any of the tools mentioned, and can be used when the rows are close together or after the trees have grown so as to fill most of the space between the rows.

Care should always be taken that the stems of the trees are not injured in any way. There should be no projecting parts about the cultivator or the harness, but if such parts are unavoidable they should be wrapped with pieces of old sacks.

GRAZING—FIRE.

Grazing animals should be rigorously excluded from all tree plantations. Even if the trees are too large to be broken off by the stock, every branch within reach will be browsed, and the desirable forest conditions of shade, undergrowth, and litter will be destroyed. In a well-established grove stock may do little harm, but until the crowns of the trees are entirely out of reach cattle should not be admitted. Even then injury may result from the trampling of the soil. A heavy soil becomes packed so that it is nearly impervious to water, while a sandy one is worn and blown away, leaving the roots exposed.

The damage to large trees in situations where moisture is abundant is not usually great, and the protection furnished to stock in such a case may more than offset the slight injury to the trees.

Every tree plantation needs to be protected by some form of fire guard. Where conditions permit, a very satisfactory guard is made by plowing two or three furrows about the plantation close to the trees and then making a second series of furrows from one to two rods outside the first. These lines may be kept free from vegetation by reploting each year or they may be used for crops that do not easily burn. The space between the two series of furrows should be kept free of all combustible material by burning it over at safe times.

Approved.

JAMES WILSON,

Secretary.

WASHINGTON, D. C., *November 24, 1906.*

[Cir. 54]

O

